ANNUAL REPORT
Department of Energy and Forestry

Forestry.
Working Now
for the Future.

Fiscal YEAR: April 1, 1987 - March 31, 1988

89-02765/

Annual Report for
April 1, 1987 - March 31, 1988

Honourable Allison Ellis, Minister

To His Honour

The Lieutenant-Governor
of the Province of Prince Edward Island

May it please your Honour:

I respectfully present the Annual Report of the Department of Energy and Forestry for the fiscal year April 1, 1987 to March 31, 1988.

The Department in 1987-88 could be compared to someone preparing for a long trip. A lot of time was devoted to planning for the future — setting goals, establishing guidelines and preparing an itinerary as Energy and Forestry progresses into the next decade and beyond.

Illustrations of the planning and preparation include the development of the 'Twenty Year Forestry Plan' and the publication of a Forest Policy for Prince Edward Island. In addition, the final draft of a revised and greatly expanded Forestry Act was completed prior to the spring sitting of the Legislature.

Besides getting our own provincial forest house in order, we were actively involved in a National Forest Awareness Campaign which gave a very high profile to forestry issues and the resource's importance to the nation. Combined with this was the province's signing of a Memorandum of Understanding based on co-operation of federal and provincial governments in natural resource development. Also, the commitment of the Department to the Provincial Conservation Strategy was undertaken.

Consistent with the above, on-going Department programs were aggressively undertaken. The opening of the Dover Seed Orchard in November of 1987 was a further illustration of the Department's commitment to the improvement of the forest resources of P.E.I. Negotiations on a Five-Year (1988-93) extension to the Federal/Provincial Forest Resource Development Agreement (FRDA), though not complete at the end of the fiscal year, were progressing toward a favourable conclusion. The original (1983-88) $20 million incentive program has been well received by landowners and the forest industry.

The presence of the Hon. Gerald Merrithew, Minister of State for Forestry, at the planting of the Province's eight (8) millionth tree seedling, and at the opening of Phase I of the UPEI District Heating System, reinforced the importance that the federal government gives to our forest development and alternate energy programs. The attendance at the Provincial Biomass Energy Conference in November 1987 of the Hon. Marcel Masse, Minister of Energy, Mines and Resources, Canada gave further recognition to the direction of alternate energy programs being undertaken and planned for P.E.I.

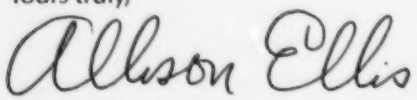
By way of preparing a well marked path for our energy future, my Department drafted a document titled "Energy Security for Prince Edward Island" outlining various options for consideration and action. This document together with Departmental interventions at the National Energy Board and P.E.I. Public Utilities Commission hearings were undertaken in an effort to ensure that this Province has access to Canadian generated power at fair prices.

As well, an Electricity Development Plan for the Province was drafted as a result of the Nastich Report of January 1987. This plan outlines means whereby the lowest, most stable rates of electrical power can be secured for Islanders both from off-Island, as well as on-Island sources. The provincially funded "Manufacturing and Processing Industries Electrical Assistance Program" initiated in 1987 was continued and has helped guarantee that Island industrial competitiveness is not eroded due to escalating power rates.

Wood energy, despite declining world oil prices, is still a viable alternative for P.E.I. and has resulted in a number of developments including: expansion of the district heating system centered at the UPEI and the mini-district heating unit between the Montague Senior and Junior High Schools. In the final planning and construction stages are a further expansion of the UPEI system as well as six biomass burning facilities in Prince County.

Your Honor, I am confident that the time and effort taken to establish goals and develop strategies that will lead the Department into the future has been well spent. In my view, the residents of Prince Edward Island are already benefitting from the policies and programs developed. Our energy and forestry activities directly affect all Islanders. In all our actions our focus is to balance our economic objectives with our environmental needs to ensure that the Island will be the better as a result.

Yours truly,



Allison Ellis
Minister of Energy and Forestry

The Honourable Allison Ellis

Minister of the
Department of Energy and Forestry
Prince Edward Island

Sir:

I have the honour to submit the Annual Report of the Department of Energy and Forestry for the fiscal year ended March 31, 1988.

Mr. Minister, I am confident in saying that the year was a milestone year in the history of forest renewal in Prince Edward Island and that any review of the Department over the next twenty years will use this past fiscal year as the reference point against which successes (or failures) will be evaluated.

A path was mapped for the development of the Province's energy and forestry sectors into the next century. The map was based on public consultations with energy experts, landowners, forest industry representatives, forest management specialists and by dialogue with the general public. 'A Forest Policy for Prince Edward Island' was drafted and provided the basis for the development of legislation, industry development and resourcce protection which the province has never before had. There is now a confidence of direction and commitment in the forestry sector. The momentum acquired in the last year will build and result in strong support for the wise use and management of our forestry resources for many years to come.

With respect to the energy mandate of the Department, I am particularly proud of the leadership you are providing in energy education. 'The Conserving Kingdom' program initiated last year was expanded in 1988 to include more public school children. In addition, the bold first steps were taken to include an alternate energy science program in the senior high school curriculum.

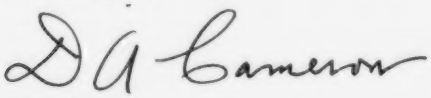
This past year the development of a provincial Electrical Development Plan and drafting of a brief titled 'Energy Security for P.E.I.' helped to set the electrical energy direction for the future.

The Department's interventions with respect to petroleum products pricing at Public Utilities Commission hearings was just another way that the Department attempted to ensure that Islanders are able to compete and live on an equitable basis with residents of the other Maritime Provinces.

These legislative and regulatory initiatives together with the ongoing forest management and alternate energy development programs will serve this province well both now and into the future.

In conclusion, I submit this Report on the Department's activities for the past fiscal year. I do this with great respect for the staff who have contributed greatly to the initiatives undertaken and with pride in what has been accomplished.

Respectfully yours,



Douglas Cameron
Deputy Minister

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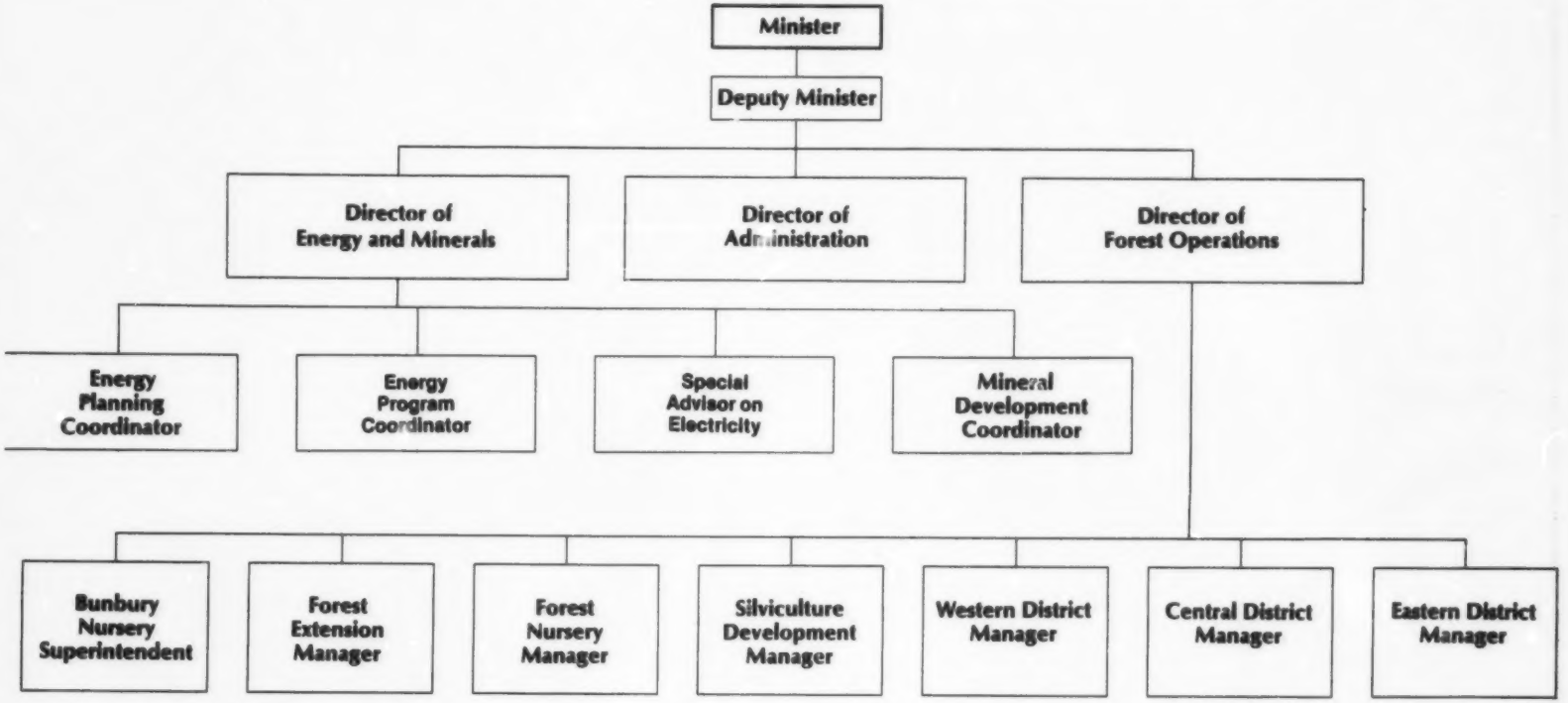
I. STRUCTURE OF THE DEPARTMENT



ENERGY AND MINERALS BRANCH

INTRODUCTION

The Energy and Minerals Branch of the Department of Energy and Forestry is responsible for the development of energy policy; monitoring the evaluation of energy alternatives; provision of conservation and alternatives information to the public; maintaining interprovincial and international liaisons; and regulating and encouraging the exploration for minerals and oil and gas within the Province.

In the time period April 1, 1987 to March 31, 1988, the Energy and Minerals Branch was particularly concerned with issues critical to the Province: development of non-conventional sources of energy for local use; ensuring secure supplies of energy—particularly electricity; and assisting Islanders to purchase energy at the lowest possible price.

Alternate sources of energy are important to P.E.I. because the conventional sources of energy, such as oil, gas, coal and hydropower, are not indigenous to P.E.I., and therefore, must be imported to meet the province's energy requirements. The Province, with support from the Government of Canada, has had to develop alternate sources of energy for use on P.E.I.

Because P.E.I. constitutes such a small energy market, the economic principles of supply and demand have resulted in higher energy costs in this province. Thus, the Energy and Minerals Branch has relied extensively on the regulatory process to carry out its objective of ensuring fair and equitable energy costs for Islanders and in this regard regularly intervenes at National Energy Board and Public Utilities Commission Hearings.

In recent years, the P.E.I. Department of Energy and Forestry, with the assistance of the P.E.I. Energy Corporation, has been promoting the use of forest products, specifically wood-biomass, as a viable and economical source of renewable energy. The use of wood biomass as a source of energy not only contributes to P.E.I.'s energy security but also to the local economy because fuel dollars are now staying on P.E.I. The forestry benefits are: expanded market opportunities for wood-lot owners; increased employment in the Island's forest industry; and the opportunity to improve the quality of our forests by replacing poor quality trees with faster growing, genetically superior seedlings.

Alternate Energy Development Program

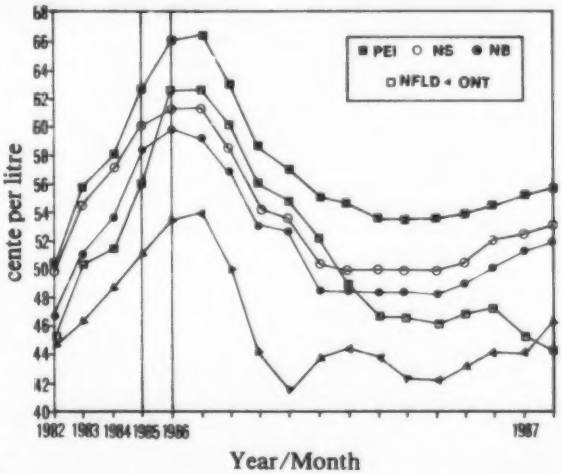
The Alternate Energy Development Program (AEDP), a jointly funded program between the P.E.I. Department of Energy and Forestry and Energy, Mines and Resources, Canada, promotes the use of biomass — principally woodchips. This is a $10,000,000 program funded over five years (1984-89), to which the province contributes $2,000,000. This program has facilitated the conversion of many of the Island's public and private institutions from the use of petroleum products to wood fuels.

Impacts and Effects of the Program

To date, the program has had little short term effect on alleviating the high cost of energy on P.E.I. The reduction in the price of oil and the introduction of electricity subsidies have, however, cut the energy costs significantly for all institutions, firms and individuals There is evidence that oil prices to institutions have been reduced to discourage conversions to biomass systems. On the other hand, current P.E.I. prices are comparable to those quoted to some classes of customers in Nova Scotia but are still far above New Brunswick rates.

REPRESENTATIVE RETAIL PETROLEUM PRICES

Regular Unleaded Gasoline, Atlantic Provinces



AEDP has contributed to the long-term security of P.E.I.'s energy supply by displacing annually approximately 8,000,000 litres of oil consumption with a locally-produced fuel. For conversions that have been implemented, or for those that are at the application stage, the net present value of the reduction in the outflow of money from the Island is $11.2 million at a 7% real discount rate.

The AEDP program has stimulated considerable employment related to the installation of biomass systems (132 person-years) and delivery of the program (21 person years). In addition, an annual requirement of 16 person-years of employment is required in the wood chip supply system.

AEDP has had an overall positive effect in linking with the objectives and programs of the Canada-P.E.I. Forest Resource Development Agreement. At least 160 ha of woodlots with no other market alternatives will be cleared annually through a wood chip fuel supply system that is viable even at today's current low oil prices.

Provincial AEDP Activities

Wood Supply Systems Program

Securing a long-term wood supply system was identified as being a provincial responsibility under the AEDP. Although slightly over one million dollars (over five years) has been allocated for this initiative, a direct subsidy program is now considered not to be of necessity. Efforts are now focused on developing support services for potential and existing wood-chip suppliers.

Communications

Communications activities undertaken by the Energy Branch during 1987-88 have included:

(1) the production and distribution of a brochure entitled "Alternate Energy on Prince Edward Island";
(2) the release of a report entitled Survey of Wood Fuel Use in Prince Edward Island, 1986-87;
(3) the compilation of a document assessing the AEDP: Mid-Term Review of the Alternate Energy Development Program, a Sub-Agreement Under the Canada-Prince Edward Island Economic and Regional Development Agreement;
(4) the hosting of "The Provincial Conference on Wood-Biomass Energy on P.E.I.", which included seminars and workshops on wood-biomass supply, wood-biomass demand, wood-supply systems, and wood-combustion systems as well as field tours and demonstrations.

Biomass Energy Conference participants at Mill River Resort.

District Heating

Developed by the P.E.I. Energy Corporation, Phase I of the University of Prince Edward Island Block Central Heating System was constructed in 1987. Upon completion of this particular project, 27 separately-owned neighbouring buildings, in addition to 4 university buildings, will be connected to the UPEI boiler plant via insulated district heating lines.

Community and Education Programs

As part of its conservation promotion and energy awareness activities, the Energy Branch in the year offered various services to the public of Prince Edward Island.

1. P.E.I. EnerPool: The EnerPool Program continued to demonstrate the effectiveness of ride-sharing transportation in optimizing energy use. The program began in 1978 and now has four routes, with each route reducing gasoline consumption by up to 47,000 litres per year.

2. Furnace Efficiency Kits: To assist homeowners in assessing their home heating systems, seven furnace efficiency test kits were available to loan, free of charge, from the Energy Branch office in Charlottetown and from three Regional Service Centres (O'Leary, Summerside and Souris).

3. Energy Cost Index: Each month, the comparative costs for fuel oil, gasoline, electricity and propane were recorded and made available to the public upon request.

4. Energy Week 1987: The Energy Branch co-sponsored and participated in Energy Week '87, an annual event promoting the efficient use of energy. In addition to the regular events of workshops and school programs, Energy Week '87 featured "Enertech '87", an expanded display of energy conservation technologies by Island businesses.

5. "The Conserving Kingdom": In conjunction with Energy, Mines and Resources, Canada, the Energy Branch toured the children's play, "The Conserving Kingdom", to all elementary schools on P.E.I. In this play and follow-up classroom activities, Dudley the Dragon teaches children the need to use energy wisely.

Dudley and friends.

"An Act to Amend the Petroleum Products Act"

In the Spring of 1986, An Act to Amend the Petroleum Products Act was introduced in the Legislature for the purpose of providing to the Public Utilities Commission the necessary authority to control the pricing of petroleum products. The introduction of this Bill was in response to concerns raised by many Islanders over the high prices they were required to pay for their petroleum products.

During that session, it was referred to the Select Committee on Legislative Proposals for further examination. The Committee conducted public hearings during the fall of 1986 and heard presentations from representatives of the major oil companies doing business on Prince Edward Island, as well as from other interested groups. In its findings, the Committee supported the spirit of the original bill and made a number of recommendations designed to more clearly define the role and mandate of the Public Utilities Commission in regulating petroleum products in P.E.I.

On May 14, 1987, the Act to Amend the Petroleum Products Act was passed in the legislature and subsequently proclaimed by the Lieutenant Governor. Under the revised Petroleum Products Act, the Public Utilities Commission was granted the power to "order a public hearing in respect of prices charged by a wholesaler or retailer for any petroleum products." The Public Utilities Commission exercised this power, and issued Notice of Hearing on 13 August 1987.

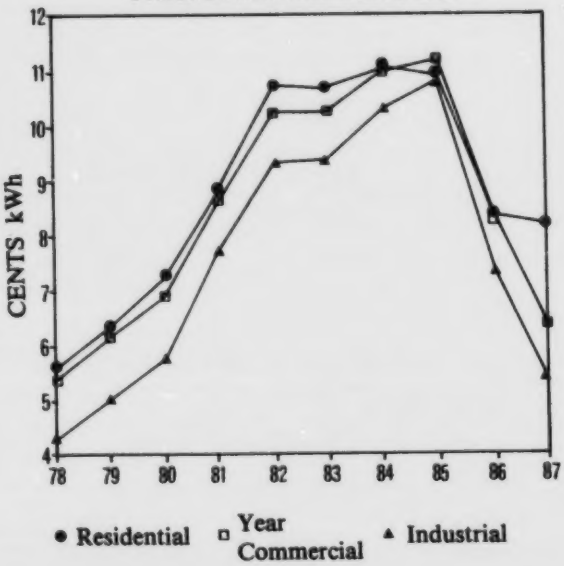
The Minister of Energy and Forestry intervened in this hearing on behalf of the residents of Prince Edward Island for the purpose of presenting for consideration evidence which he felt would enable the Commissioners to establish a mechanism for determining fair and reasonable petroleum products prices for the present and for the future.

As of March 31, 1988, the Petroleum Products Hearings had been completed. Decisions and recommendations were to follow.

The Electricity Rate Reduction Program

Coming into effect September 1985, the Electricity Rate Reduction Program included incentives to reduce rates for Prince Edward Island's electricity customers.

ELECTRICAL TATE COMPARISON
Prince Edward Island 1978-1987



The Public Utilities Income Tax Transfer Act (PUITTA) Rebate Program

Initiatives which were in effect during the 1987-88 year included the "Public Utilities Income Transfer Act Rebate Program". Under this rebate program, all electricity customers on P.E.I. received a rebate in the form of a reduction on their electricity bills.

The Interim Industrial Competitiveness Assistance Subsidiary Program

This assistance program was offered through the Federal Government's Minister of Regional Industrial Expansion. It was a two year program commencing October 1, 1985 with the objective of reducing electrical rates to the province's industrial customers. The Interim Industrial Competitiveness Assistance Subsidiary Program was formulated under the joint Canada/P.E.I. Economic and Regional Development Agreement (ERDA), financed on a 80/20, Federal/Provincial cost shared basis. It offered a 17 percent rebate to commercial and industrial customers to mitigate the impact that high world oil prices had on the cost of electricity to the Island.

The Government of Canada contributed a maximum of $3.4 million a year for two years for a total of $6.8 million. The Province's contribution was $0.85 million per year. This provided a total commitment of $4.25 million per year. These funds were used to reduce electrical power rates to the Province's industrial customers. The program terminated on September 30, 1987 and was underspent by $2.2 million, due to lower than expected oil prices.

The Manufacturing and Processing Industries Electricity Assistance Program

The Provincial Government realized it must take immediate action to prevent any negative impact on Island businesses which compete with products from out of province, and announced this program effective October 1, 1987. To qualify for assistance under the "Manufacturing and Processing Industries Electricity Assistance Program", a firm must:

- manufacture or process products for export from P.E.I. or which compete with similar products imported into the Province;
- be operational in P.E.I. at least six months of the year; and
- have consumed at least 30,000 kilowatt hours of electricity over the twelve month period prior to September 30, 1987.

This program partially replaces the Interim Industrial Competitiveness Assistance Program. Some 100 firms qualified to receive assistance.

The "Manufacturing and Processing Industries Electricity Assistance Program" offers qualifying industrial customers a 20 percent rebate on their monthly electricity bills, to allow them to be competitive with off-island firms.

The modified program is in addition to the existing Publicc Utilities Income Tax Transfer Act Rebate Program, which appears as a credit on all ratepayers' monthly bills.

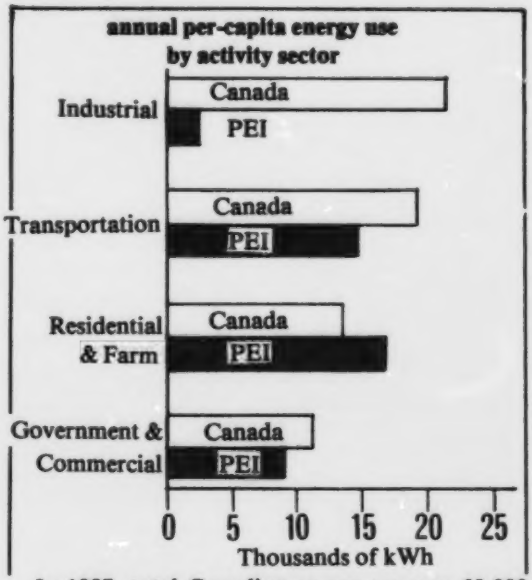
The Federal government (ACOA) agreed to pay 80 percent of the program costs to March 31, 1988.

Regulatory Matters

National Energy Board: Hydro-Quebec Export

Hearings began in Montreal on March 17, 1987, on an application by Hydro-Quebec to export electricity energy to the New England Utilities. The license requested authorization to export 70 billion kilowatt hours of firm energy over 14 years beginning in 1990.

The Province of P.E.I. intervened against the export, on the grounds that Hydro-Quebec had not offered the electricity to neighbouring provinces at a price that is no higher than the export price for comparable service. On June 18, 1987, the Board denied the license on the above grounds.



In 1987, total Canadian energy use was 65,000 kWh per person. The P.E.I. total was 42,500 kWh per person. The P.E.I. figures include biomass energy.

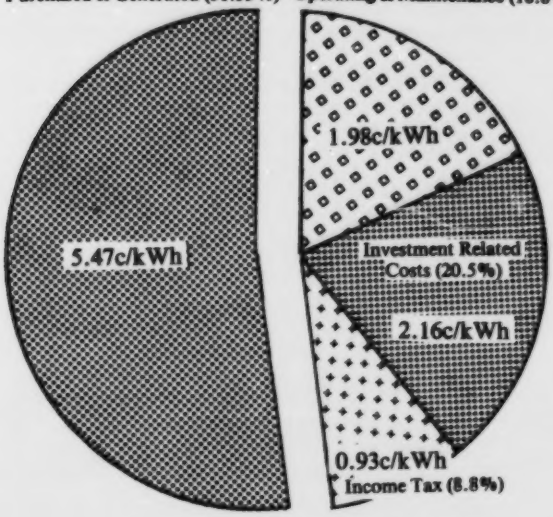
Hydro-Quebec re-applied to the Board, after having offered the power to neighbouring utilities. This included striking a six-year deal with the New Brunswick Electric Power Commission for energy and capacity. The NEB held a hearing in early December, 1987, at which the Province did not intervene. It was felt that the original intervention had forced Hydro Quebec to conclude a satisfactory arrangement with New Brunswick so it would be inappropriate to intervene.

On January 26, 1988, the National Energy Board announced it had approved the application.

Public Utilities Commission: Application by Maritime Electric

On January 19, 1986, Maritime Electric Company, Limited ("Maritime Electric") and Maritime Electric (P.E.I.) Limited ("MEPEI") applied to the Public Utilities Commission (PUC) for approval of proposed rates.

COST OF ELECTRICITY BY COMPONENT — 1987



Legal Counsel for the Minister of Energy and Forestry "intervened" at the Hearing of the application, Phase I and II.

Phase I of the hearing took place March 10-19, 1987. Three issues were discussed:

(i) operating expenses
(ii) a fair rate of return on common equity, and
(iii) proposed changes in the method and rate of depreciation of MECO's assets.

Phase II of the hearing took place June 9, 1987, and dealt with proposed changes to MECL's rates for 1988, and to the minimum criterion of eligibility for the interruptible rate from 100 kVA to 600 kVA.

The rates presented were based on the decision of the Public Utilities Commission issued on May 29, 1987, that a maximum rate of return on common equity of 13.75% was just and reasonable. In addition, the Commission reduced the proposed 1988 general expenses by $160,000.

The discussion at the Phase II hearing centered around the change in the minimum qualifying usage for the interruptible rate. The decision of the PUC, issued on October 15, 1987, established the new level at 500 kVA, with those firms no longer eligible to be phased out over four years. The PUC further ordered the utility to review with its remaining interruptible customers the question of automatic switching devices, including costs.

In addition, MECL's proposal to increase the billing demand for customers with interconnected generation equipment was dismissed.

On January 26, 1988, the PUC sent MECL a further list of interrogatories related to the proposed revenues, expenditures and sales for 1988.

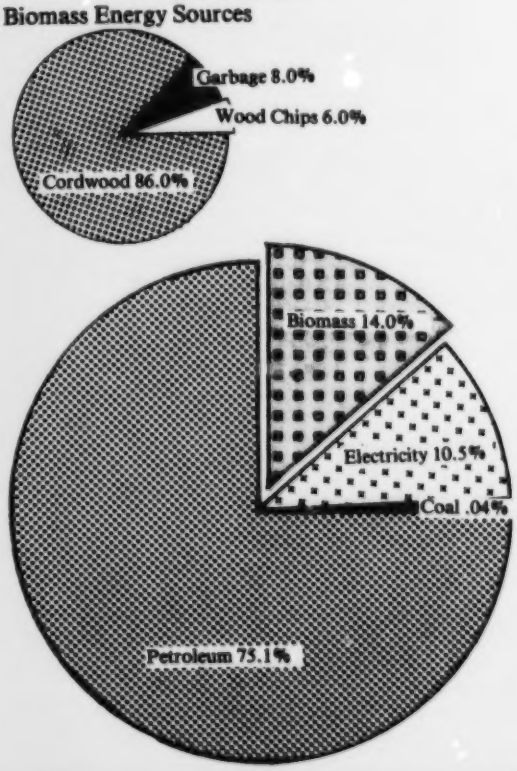
Public Utilities Commission: Maritime Electric Advance Plan

The Public Utilities Commission issued a new rule (No. U-001) on 27 March 1986 requiring Maritime Electric to file with the PUC "biennial or triennial reports which detail projections of long rang electricity usage and construction plans."

The first plan was filed by MECL in March 1987. The PUC called a hearing in two phases, the first phase of which was to review MECL's activities, and the second of which assessed MECL's plans and considered submissions from interested parties.

The Phase I hearing took place on July 13, 1987, during which time the PUC discussed a press release and statement issued by the Minister of Energy and Forestry which stated that all future electrical generation would be owned by the Province. The reason for this was simply to provide the "least-cost" approach to Island consumers. The Phase II hearing took place on February 23, 1987.

P.E.I. ENERGY CONSUMPTION BY FUEL TYPE
1987 Estimates



DEPARTMENT OF ENERGY & FORESTRY
EXPENDITURE SUMMARY
FISCAL YEAR 1987-1988

EXPENDITURES

Departmental Management	$ 376,346	
		$ 376,346
Energy and Minerals Branch		
Branch Management	$ 447,683	
E.R.D.A. Energy Sub-Agreement	176,479	
Electrical Rate Relief Program	5,403,675	
E.R.D.A. Mineral Sub-Agreement	68,434	$6,096,271
Forestry Branch		
Branch Management	$1,451,851	
Bunbury Nursery	204,095	
Firefighting	68,404	
Hedgerow/Shelterbelt	30,942	
Headquarters Administration	176,273	
Extension	235,060	
Woodlot Technology Transfer	54,665	
Silviculture Development	260,866	
Industry Development	59,352	
Biomass Inventory	168,180	
Seedling Production	256,165	
Eastern District — Crown Land	305,573	
Central District — Crown Land	212,494	
Western District — Crown Land	320,698	
Eastern District — Administration	161,020	
Central District — Administration	183,700	
Western District — Administration	182,785	
Forestry Branch Capital	80,313	$4,412,436
Departmental Total		$10,885,053

DEPARTMENT OF ENERGY & FORESTRY
REVENUE SUMMARY
FISCAL YEAR 1987-1988

REVENUES

Departmental Management

Energy and Minerals Branch		
Gas & Oil Licenses	$ 13,078	
Sales (Miscellaneous)	66	
E.R.D.A. Energy SubAgreement	25,958	
Electrical Rate Relief	1,699,977	
E.R.D.A. Mineral Sub-Agreement	54,839	
		$1,793,918
Forestry Branch		
Branch Management	$ 297,545	
Bunbury Nursery	108,538	
Forest Fire Protection	3,064	
Hedgerow/Shelterbelt	6,098	
Headquarters Administration	138,952	
Extension	206,853	
Woodlot Technology Transfer	47,344	
Silviculture Development	256,791	
Industry Development	52,230	
Biomass Inventory	145,552	
Seedling Production	265,108	
Eastern District — Crown Land	268,788	
Central District — Crown Land	186,130	
Western District — Crown Land	279,136	
Eastern District — Administration	139,040	
Central District — Administration	158,664	
Western District — Administration	159,969	
Seedling Sales	5,651	
Eastern District Crown (Sale of Wood)	5,413	
Central District Crown (Sale of Wood)	6,049	
Western District Crown (Sale of Wood)	2,930	
	$2,739,845	
Departmental Total		$4,533,763

The Canada-Prince Edward Island Mineral Development Subsidiary Agreement

The Government of Canada and the Province of Prince Edward Island signed an Economic and Regional Development Agreement in the second quarter of 1984.

A Mineral Development Subsidiary Agreement between the two governments was signed on January 7, 1986.

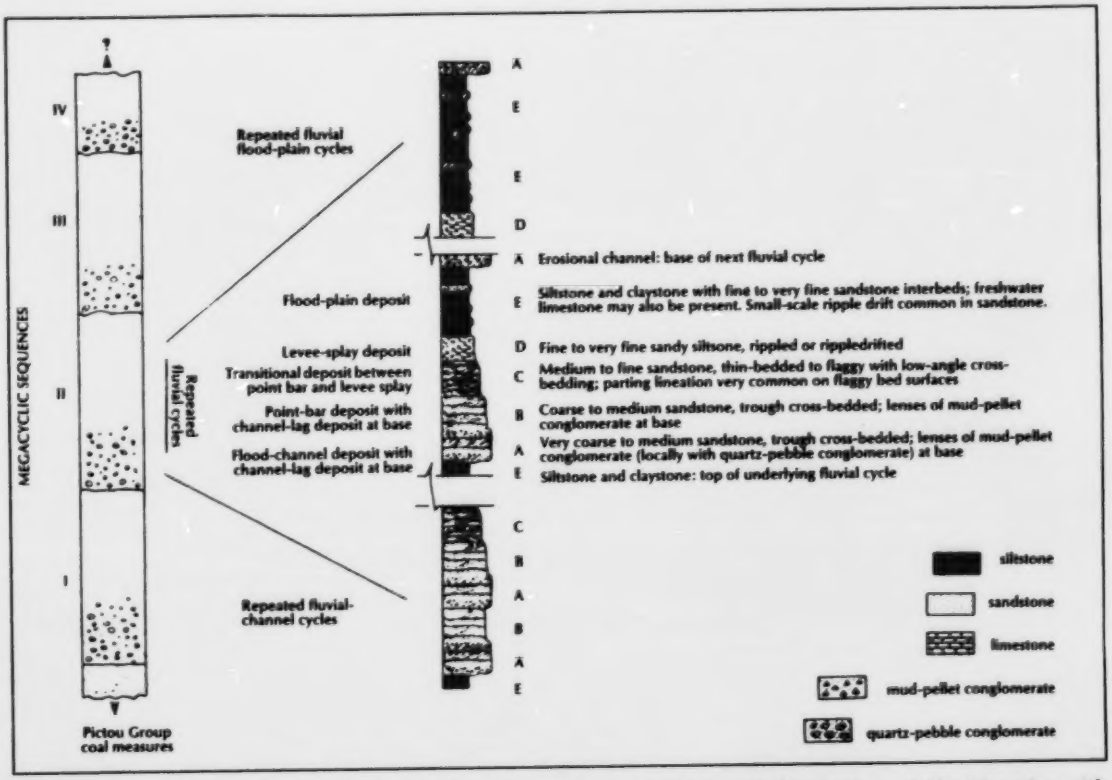
Under this subsidiary agreement, a three-year program was set up to provide, for the first time, a comprehensive inventory of the onshore aggregate resources of Prince Edward Island.

The first phase of this program involved the compilation of background information on aggregate resource development. Results of the preliminary studies broadly outlined areas of the province which could have future aggregate development potential.

Phase II of the Onshore Aggregate Resources program has been completed. Detailed studies were carried out in selected areas of the Province with Seismic profiling, geological mapping, and selected site sampling being performed. Results of these investigations were compiled into **a report entitled, "Interim Report on the Onshore Aggregate Resources Program". Copies of this report are available at the Department of Energy and Forestry, Energy and Minerals Branch, P.O. Box 2000, Charlottetown, P.E.I., C1A 7N8.**

The third and final phase of the program will extend the detailed investigation coverage to the rest of the province.

The detailed studies carried out to date have shown that there are still extensive aggregate resources remaining in most of the producing areas. The studies also strongly suggest that the contact areas between van de Poll's Megacyclic Sequences have the highest potential for additional coarse aggregate resources.


MEGACYCLIC SEQUENCES
IV
III
II
I
Pictou Group coal measures
Repeated fluvial flood-plain cycles
Repeated fluvial cycles
Flood-plain deposit
Levee-splay deposit
Transitional deposit between point bar and levee splay
Point-bar deposit with channel-lag deposit at base
Flood-channel deposit with channel-lag deposit at base
Repeated fluvial-channel cycles
A Erosional channel: base of next fluvial cycle
E Siltstone and claystone with fine to very fine sandstone interbeds; freshwater limestone may also be present. Small-scale ripple drift common in sandstone.
D Fine to very fine sandy siltsone, rippled or rippledrifted
C Medium to fine sandstone, thin-bedded to flaggy with low-angle cross-bedding; parting lineation very common on flaggy bed surfaces
B Coarse to medium sandstone, trough cross-bedded; lenses of mud-pellet conglomerate at base
A Very coarse to medium sandstone, trough cross-bedded; lenses of mud-pellet conglomerate (locally with quartz-pebble conglomerate) at base
E Siltstone and claystone: top of underlying fluvial cycle
siltstone
sandstone
limestone
mud-pellet conglomerate
quartz-pebble conglomerate

Diagrammatic interpretation showing idealized vertical relationships and distribution of fluvial cycles with respect to the megacyclic subdivision of the Prince Edward Island redbeds. Drawing not to scale: the megacyclic sequences are 900-1200 feet (300-400 m) thick, and complete fluvial cycles approximately 60 feet (20 m) thick. (After van de Poll 1983)

IV. FORESTRY BRANCH

Introduction

The Forestry Branch of the Department of Energy and Forestry is responsible for the delivery of a comprehensive forest management assistance program to private woodlot owners; the management of 25,000 hectares of crown lands, research and development of new technology for wood processing and production; and the provision of training, marketing and technical advisory services to the forest industry. The coordination of forest fire control operations and the management of Bunbury Nursery, are also the responsibility of the Forestry Branch.

Prince Edward Island's forest resource is owned by some 16,000 woodlot owners and totals approximately 276,000 hectares or 48% of the Island's land base. The management of this resource and the development of a healthy and viable industry represents both a challenge and an opportunity.

While studies indicate that P.E.I.'s forest soils and growing conditions are among Canada's best, the state of the forest resource today is such that its' quality limits the capabilities of industry to use it. Insect and disease problems, poor harvesting practices, and the clearing of forest land for agriculture, have lead to a serious decline in this once valuable resource. Lack of private investment capital and poor markets have also contributed to the industry's inability to upgrade their production capability.

Although several attempts at forest management have been made since the early 1950's, it was not until the signing of the five-year Canada/Prince Edward Island Forest Resource Development Agreement (F.R.D.A.) in 1983, that funding for long term planning was finally established. Under this agreement, the Departmment of Energy and Forestry and the Canadian Forestry Service administer $20.144 million in the delivery of the following programs:

Program Description	$Millions
1. Private Land Management	4.494
2. Crown Land Management	4.040
3. Forest Development	
3.1 Forest Extension	.887
3.2 Woodlot Technology Transfer	.554
3.3 Silviculture Development	1.602
3.4 Industry Development	.652
3.5 Forest Biomass Inventory	.507
3.6 Seedling Production	2.166
4. Administration	5.242

The federal contribution accounts for $13.688 million or 68% while the provincial contribution is $6.456 million or 32%.

The overall objective of the Agreement is to maximize the economic benefits to Island residents which are attainable from the forest resource. Specific objectives are:

1. To permit the development of a wood fuel industry to double the consumption of wood from 168,000 m^3 (70,000 cords) to 336,000 m^3 (140,000 cords) by 1988 thus potentially decreasing fuel imports by 111,000 barrels/year.

2. To permit the province to attain a level of production in sawn and processed lumber of 21 million board feet per year.

3. To increase direct employment in the forest industry from the present 400, to 600 person-years over the five year plan.

4. To permit the development of income and employment opportunities in associated industries such as consulting, silviculture contracting, Christmas trees, furniture and crafts, and maple syrup.

Highlights of 1987-88 included: planting of the 8 millionth tree grown under forest management programs, opening of the Dover Seed Orchard, participation in Phase 2 of the National Forest Awareness Advertising Campaign, official declaration of the red oak as the Provincial Tree of Prince Edward Island, and the completion of the 1983-88 Canada/Prince Edward Island Forest Resource Development Agreement:

TABLE #1

WOODLOT MANAGEMENT PLANS WRITTEN AND SIGNED 1987-88 AND CUMULATIVE TOTALS

DISTRICT	1987-88 WRITTEN	1987-88 SIGNED	1983-88 WRITTEN	1983-88 SIGNED
WEST	138	143	797	745
CENTRAL	83	79	731	583
EAST	114	167	742	696
TOTAL	335	389	2270	2024

TABLE #2
CUMULATIVE TOTAL OF WORK COMPLETED ON PRIVATE AND CROWN LANDS 1983-88

ACTIVITY	PRIVATE	CROWN	TOTAL
ROADS (KM)	335.2	94.2	429.4
BOUNDARY (KM)	603.3	92.3	695.6
SITE PREP (HA)	3889.2	750.0	4639.2
PLANT MAINT (HA)	1014.8	296.2	1311.0
STAND IMPROVE (HA)	2785.8	225.7	3011.5
STAND REC (HA)	1198.0	—	1198.0
HARVEST (CORDS)	—	2447	2447
CONES (BUSH)	—	1217	1217

Mike Butler

Tree Improvement Supervisor

Silviculture Development

The highlight of 1987-88 was the official opening of the Dover Seed Orchard near Murray River. This facility will produce genetically improved seed for reforestation efforts **by crossbreeding the clones of plus trees. Species currently grown include white pine, eastern larch, white spruce, red spruce, and balsam fir with full scale seed production slated to begin in 1992.**

In order to stock the Dover Seed Orchard, forty new plus tree selections were made bringing the total number of trees selected to 225. Approximately 5000 scions from plus trees (57% were white spruce) were grafted for use in future seed production programs.

Work continued on the problem of early white spruce mortality with the establishment of 30 permament sample plots. Each plot received varying amounts and combinations of fertilizers containing several nutrients. Foliar samples were taken from each plot to provide background data.

A new P.E.I. Forest Handbook was produced as a field guide for silviculture treatments. This new guide will be used by private and Crown land staff to improve their productivity and to standardize many treatments.

Hon Allison Ellis and Mr. Pat Binns, M.P. participated in Dover Seed Orchard opening.

John Hutchinson
Forest Mensurationist

Biomass Inventory

Wood supply analysis was conducted for several wood energy conversion projects such as the Charlottetown District Heating Project. These projects will enable Island woodlot owners to sell unmerchantable wood while improving their woodlots, and lessen the province's dependence on outside sources of energy.

Work continued on the wood supply model for Prince Edward Island. Tables for diameter/stem relationships and methodologies for normal yield were also developed.

Equipment and software for the Geographic Information System (GIS) were acquired. This system will allow the Department to update and revise forest inventory information as it becomes available and to compare past forest history and harvesting with the current state of the resource. Testing of the system's capabilities was begun with the final analysis expected in late 1988.

Staff of the Biomass Inventory Section also completed a five-year Forest Development Plan as a background document for a new forestry agreement for 1988-93.

Ken Mayhew
Extension Technician

Forest Extension

The Forest Extension Section participated in Phase 2 of the National Forest Awareness Campaign, which focused on issues pertinent to the Atlantic Provinces. This project was part of a national campaign to increase the awareness of forestry issues among Canadians.

A comprehensive woodlot management course for Island woodlot owners was developed and tested at the facilities of Holland College in Charlottetown. This course will assist woodlot owners to make decisions concerning the day to day operation of their woodlot.

Red Oak (Quercus rubra) was officially declared to be the Provincial Tree of Prince Edward Island in May 1987. The bill was sponsored by the Minister of Energy and Forestry Allison Ellis. A promotional brochure was prepared and red oak seedlings were distributed to all interested grade 7 students to commemorate this event.

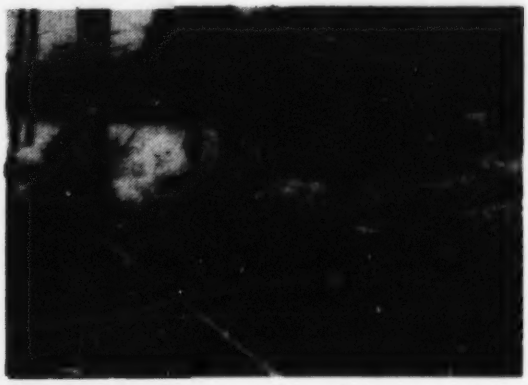
Lt. Governor Lloyd MacPhail and Hon. Allison Ellis plant a Red Oak in front of the Coles Building on Arbor Day, 1987.

The Department of Energy and Forestry also sponsored the annual Woodlot Extension Specialists Conference. An international affair, this conference attracted delegates from each Canadian province as well as four U.S. states. Delegates discussed the issue of reaching the 90% of woodlot owners who do not manage their woodlands.

Work continued on the six Demonstration Woodlots with promotions such as "Walk a Woodlot" being held during National Forest Week. The Extension Section sponsored a photo contest entitled "A Forest For All Seasons" as a means of drawing greater public attention to the importance of forests to Islanders.

Woodlot Technology Transfer

The sixth Annual Woodlot Management and Equipment Exhibition was held in Brookvale in 1987. Approximately 400 people attended the demonstrations of a cable logging system, power trailer, and large scale porter. Information was also provided to woodlot owners interested in managing older plantations and old field white spruce stands.



Island Logger being put through its paces at the Annual Woodlot Equipment Demonstration.

Testing of the "Island Logger", a cable logging system, was begun on the New Harmony Demonstration Woodlot. This piece of equipment is meant for use on steep slopes or on sensitive sites where heavier equipment might damage the area, and is designed to be cost effective for small to medium scale forestry contracting firms.

The semi-annual meeting of the Advisory Committee on Woodlot Engineering and Research (ACWER) was held in Charlottetown. ACWER oversees the testing of various pieces of woodlot equipment and silvicultural techniques in Eastern Canada.

A video on all pieces of equipment purchased, developed, and tested by the Department of Energy and Forestry was completed. This film will be used to show potential clients what types of equipment are available and give some information of productivity and operating procedures without staff having to actually set up the equipment.

Industry Development

The Holland College Silviculture Worker Program graduated 25 students and all of the graduates found work in the Island's forest industry. In addition, a Swedish forestry consultant was brought to the province to assist forest workers and contractors improve their productivity, and to provide advice on trends in forest worker education.

The first Annual P.E.I. Forest Contractors Conference was held in February and addressed the question of preparing for the 90's. Approximately 60 delegates representing industry woodlot owners, and government attended this conference.

Technical assistance was provided to the sawmill sector with six sawmills receiving assistance to modernize. Assistance was also provided for the purchase of new **equipment for contractors involved in harvesting biomass and pulpwood. Analysis continued on the potential to provide an out-of-province pulpmill with long-term supplies of Island wood Fiber.**

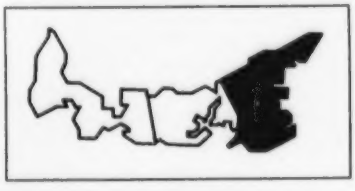
Silviculture Contractor, Alex Campbell, salvages hardwood fuel from a thinning.

The Department continued to provide support for the P.E.I. Old-Time Woodsmen Association. In 1987, the Association conducted demonstrations of the skills used by old-time loggers at several community fairs and exhibitions across the Island.

District Operations

Staff of the three forest districts are responsible for the management of both private and crown forested lands within the district boundaries. This year $1,128,136 was spent on 800 private woodlots, for forest improvement work completed under the Canada/Prince Edward Island Forest Resource Development Agreement.

The re-opening of the former Henderson Lumber Company sawmill in Georgetown now known as Georgetown Timber resulted in an increase in pulpwood market opportunities. This and an increased demand for woodchip fuel brought about a shift in emphasis from stand improvement work to commercial harvesting in 1987-88.



Eastern District

In 1987-88 there were 114 management plans written for woodlot owners in the Eastern District. An additional 167 plans were signed, bringing the District's five-year total to 742 plans written and 696 plans signed.

Work completed on private land totalled 119 ha of stand improvement, 543 ha of site reclamation, and 255 ha of site preparation. Silviculture contractors also completed 58 km of roads, 80 ha of plantation maintenance and 25 km of woodlot boundaries.

Keigh Haight
Senior District Supervisor

Crown land activities included 118 ha of site preparation, **the harvest of 500 cords of fiber, and the collecting of 36** bushels of cones for the nursery's seed requirements.

Extension activities by Eastern District staff involved the delivery of a forest management course at Vernon River Community School where students were given instruction on proper silvicultural techniques, tours of the Demonstration Woodlots in Valleyfield and New Harmony, and assisting with the Woodlot Extension Specialists Seminar in Brudenell. Workshops for Christmas tree producers were also conducted by Eastern District staff in all three districts.

George Coade
Senior District Supervisor

Central District

Central District staff were busy in 1987-88 with the increased activity on private and Crown lands. The increases in the amount of work being done on private land fell into the following categories: 133 ha of plantation maintenance; 25 km of road construction; and 191 ha of stand improvement, most of which was done by forest contractors.

Activity levels on private land were down slightly for boundary maintenance with 21 km completed and for site preparation with 358 ha.

Work on Crown land included the completion of 11.8 ha of plantation maintenance, 13.7 ha of site preparation, and 3.9 km of road construction. Cone collection for reforestation efforts totalled 18 bushels, while 259 cords of wood fiber were harvested and sold.

Staff conducted tours of the Demonstration Woodlots in Brookvale and Auburn and taught a course on woodlot management at the community school in Crapaud. The District also hosted the Annual Woodlot Management and Equipment Exhibition in Brookvale. Over 400 people attended this event.

Harvey Morris
Senior District Supervisor

Western District

With the signing of 143 new clients under the private land program, and the preparation of 138 new plans, staff of the Western District brought their five-year management plan total to 7978 plans written and 745 plans signed.

These clients and the contractor who served them completed 107 ha of stand improvement, built 19 km of roads, and cleared 82 km of bundary lines. Work was also finished on 84 ha of stand reclamation, 365 ha of site preparation and 42 ha of plantation maintenance. The emphasis on Crown land was mostly in the area of site preparation with 82.3 ha completed, and stand improvement with 28.7 ha. Work was also done on 18 ha of plantation maintenance, and 2 km of forest access road. Harvesting levels reached 300 cords of wood fiber, while 50 bushels of cones were collected for the nursery.

Western District Staff gave tours of the Demonstration Woodlots and assisted a local maple syrup producer with tours of his operation in March and April. Staff also participated in the Biomass Seminar which was held at Mill River.

TABLE #3
WORK COMPLETED ON PRIVATE LAND
1987-88

ACTIVITY	WEST	EAST	CENTRAL	TOTAL
ROADS (KM)	19	58	25	125
BOUNDARY (KM)	82	25	21	128
SITE PREP (HA)	365	543	358	1266
PLANT MAINT (HA)	42	80	133	255
STAND IMPROVE (HA)	107	119	191	417
STAND RECLAIM (HA)	84	255	182	521

TABLE #4
WORK COMPLETED ON CROWN LAND
1987-88

ACTIVITY	WEST	EAST	CENTRAL	TOTAL
ROADS (KM)	2.0	14.6	3.9	20.5
SITE PREP (HA)	82.3	117.7	13.7	213.7
PLANT MAINT (HA)	18.0	—	11.8	29.8
STAND IMPROVE (HA)	28.7	7.0	1.0	36.7
HARVEST (CORDS)	300	500	259	1059
CONES (BUSH)	36	50	18	104

Glen Kelly
Seedling Production
Supervisor

Seedling production

Seedlings produced for reforestation efforts on P.E.I. are grown at the J. Frank Gaudet Tree Nursery in West Royalty. This facility which produces both container and bareroot seedlings, consists of two gutter-connected, double layer, polyethylene greenhouses with a total growing space of 3,700 square meters (approximately 1 acre) and 35 hectares of land for the production bareroot stock.

Species currently under production include black spruce, white spruce, white pine, red pine and eastern larch for pulpwood and sawlogs, balsam fir for Christmas trees, and Austrian Pine and hybrid poplar for shelterbelt/hedgerow establishment.

In 1987-88, 2,778,848 seedlings were shipped to reforestation sites across the province. Black spruce and red pine accounted for 32% and 21% of the total respectively, with white spruce at 19%, eastern larch at 14% and balsam fir, hybrid poplar, Austrian and white pine taking up the remaining 15%.

Seedlings produced at the nursery are started from seed collected from high quality trees. This seed is stored in refrigerated units until it is needed thus reducing early germination and avoiding spoilage due to fungi and bacteria. This storage allows adequate numbers of trees to be produced, even in poor seed years.

Seed is sown in March with germination occuring shortly after. The seedlings are allowed to develop in the greenhouse until August, when they are placed in outdoor holding areas to promote hardiness to enable survival during the winter months.

Production levels for the 1988 planting season is projected at 2,875,304 seedlings.

Seedling Production Greenhouse Complex at the J. Frank Gaudet Tree Nursery.

TABLE #5
SEEDLING PLANTED ON PRIVATE AND CROWN LAND
1987-88

DISTRICT	PRIVATE	CROWN	TOTAL
NURSERY	—	26,815	26,815
EAST	999,488	69,944	1,069,432
CENTRAL	756,701	34,585	791,286
WEST	565,780	292,436	858,216
OTHER*	—	—	33,099
TOTAL	2,321,969	423,780	2,778,848

* MONTAGUE WATERSHED PROJECT

TABLE#6
PLANTING TOTALS BY SPECIES
1983-1988

SPECIES	83/84	84/85	85/86	86/87	87/88
jack pine	19885	—	—	—	—
red pine	230000	267600	242077	592100	593496
white pine	—	—	50456	57600	41520
Austrian pine	—	63600	44911	41000	90490
white spruce	412005	549200	441927	463000	541196
black spruce	636404	536600	348047	522600	858216
eastern larch	121396	—	178649	179500	385996
balsam fir	65100	115700	210588	225837	239837
white cedar	—	14500	—	—	—
hybrid poplar	7675	23700	28200	27500	28097
TOTAL	1492456	1470900	1544855	2109200	2778848

Forest Fire Control

The number and severity of forest fires was much lower in 1987 than in the previous year. A total of 113 hectares of forest, scrub, and brush were burnt in 52 fires, the largest being one in Blooming Point which consumed 33 hectares of young hardwoods and grasses.

Several recommendations made following studies of the **fires in 1986 were implemented and included: the training of volunteer firemen in forest fire control methods; and the purchase of an integrated mobile radio system.**

A Forest Fire Policies and Procedures Manual was developed and printed, to identify the responsibilities of each agency and individual involved in forest fire control. The need for this policy arose from the 1986 fire when the responsibility and authority of several different agencies overlapped.

The forest fire truck in Souris was replaced with an up-to-date model. This new truck will dramatically improve the capabilities of that department to respond to fires in that area.

Responsibility for the calculation of the Forest Fire Weather Index was given to the Department of Energy and Forestry. As well, a video entitled "Seven Days in May" was produced for use in training fire fighters.

Keith Brehaut
Bunbury Nursery
Superintendent

Bunbury Nursery

The role of Bunbury Nursery is to produce and provide plant material and cultural information to the public and offer support for the efforts of the landscape industry. Sales of plant materials in 1987-88 totaled $110,000.00.

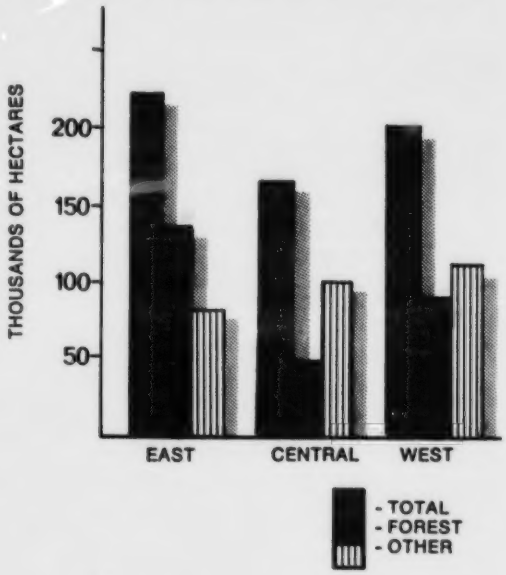
The Landscape Assistance Grant Program approved 16 projects and provided approximately $5,000 in grants. This program assists groups and municipalities to purchase nursery stock for beautifying and landscaping Island communities.

Extension services were provided to Island communities concerned about the effect Dutch Elm Disease (DED) would have on their trees. An information seminar was held to help affected communities develop DED sanitation programs. Special efforts were made in Charlottetown and Summerside to establish some form of control measures.

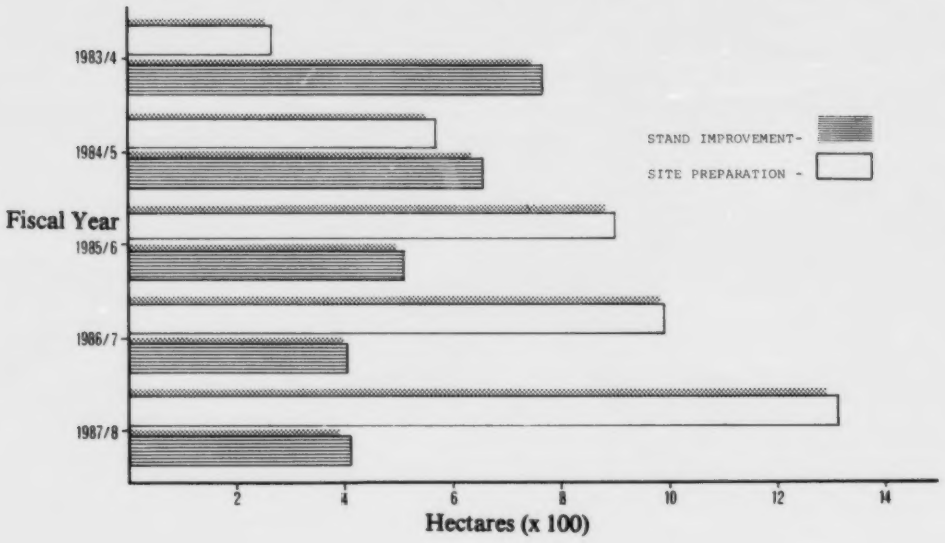
Bedding Plant trials were conducted on 130 varieties of annuals. These trials are conducted to determine which varieties are best suited to Atlantic conditions. Woody plants are tested under the Shrub Evaluation Trials with subject plants tested for adaptability and hardiness over a five-year period. Some 41 plants from 13 varieties were added in 1987 for a new total of 76 varieties on trial.

Efforts continued towards recruitment of more Island members for Landscape Atlantic, a member agency of Landscape Canada. At present, the only Island member is Bunbury Nursery, making the job of distributing information on changes to plant material regulations much harder.

SUMMARY OF LAND AREA BY FOREST DISTRICT



annual totals of site preparation and stand improvement on private land



number of written and signed private land management plans (1983-4 TO 1987-8)